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BRIAN T. RIVERS
NOKIA INCORPORATED
6000 CONNECTION DRIVE
MD 1-4-755
IRVING, TX 75039

EXAMINER	
PHILPOTT, JUSTIN M	
ART UNIT	PAPER NUMBER
2665	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/703,075	GARCIA-LUNA-ACEVES ET AL.	
	Examiner	Art Unit	
	Justin M Philpott	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☒ Claim(s) *4,7-9,12 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because in Figure 3A reference characters "110" and "318" have both been used to designate the "Send hello, reset hello, counter" box, reference characters "120" and "322" have both been used to designate the "Reset hello counter and send CONETS schedule packet" box and reference characters "210" and "312" have both been used to designate the "Process schedule packets in order received using NETS procedures" box. A proposed drawing correction or corrected drawings are required in reply to the office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are further objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: "210" in Figure 2, "250" in Figure 3A, "330" and "360" in Figure 3B and "s0-s10", "A to D", "B to E", "C to F", "C to G", "Ch1", "Ch2" and "Ch3" in Figure 7. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are further objected to because reference character "20" in Figure 1 does not clearly indicate a subnetwork as described in the specification. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities:

5. The specification does not clearly describe subnetwork 20 (p. 7, lines 22-30). Subnetwork 20, shown in Figure 1, does not indicate a structure resembling that of subnetworks 30, 40 and 50, however, the specification refers to subnetworks 20, 30, 40 and 50 collectively and does not distinguish this difference. Appropriate correction is required.

In the description of Figure 3 beginning on page 18, line 17, the specification refers to node Y and node X, however, these reference characters are not included in Figure 3. The applicant is required to insert "a" in between "when" and "node Y" (p. 18, line 17), and/or preferably to insert the phrase "(not shown)" or an equivalent statement thereof, following the first mention of node Y and node X if applicant does not include such a reference in the figure. Appropriate correction is required.

In the specification beginning on page 22, line 28 and continuing through to page 23, line 19, it is unclear as to what applicant is describing. Particularly, it is unclear whether applicant is describing Figure 7, Figure 1 or both figures simultaneously. Proper indication is required. Furthermore, the specification is not consistent with the reference characters provided in Figure 7. For example, the specification refers to channels 1-3, slots 1-10, and nodes/labels A-G while Figure 7 has labels ch1- ch3; s1-s10; and "A to D", "B to E", "C to F" and "C to G", respectively. Appropriate correction is required.

6. The specification also is objected to because of the following minor informalities:

7. The term "Netwrok" should be changed to the word "Network" (p. 9, line 20).

The references to "node X" (p. 18, line 29 and line 30) are repetitive. Appropriate correction is required.

The word "are" (p. 20, line 19) should be changed to "of".

The term "tom" (p. 22, line 4) must be changed to a word(s), such as: to, from or to/from.

Information Disclosure Statement

8. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Objections

9. Claims 4, 7-9, 12 and 21 are objected to because of the following informalities: "comprising" (claim 4, line 5) should be changed to "comprises", "for" (claim 7, line 17) should be changed to "of", "to" (claim 8, line 11) should be inserted in between "node" and "said second", "send" (claim 9, line 15) should be changed to "sent", "or" (claim 9, line 16) should be

changed to "of", "for" (claim 9, line 17) should be changed to "of", "noes" (claim 12, line 5) should be changed to "nodes" and "using" (claim 21, line 3) should be changed to "use". Appropriate correction is required.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 4, 7-9, 11, 15, 18 and 20-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "said time frame" in the present claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 4 recites the limitation "said second scheduling information" (line 10) in the present claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites "said step of sending" in claim 6. Claim 6 recites two steps of sending: sending a schedule packet and sending an acknowledgement packet. It is unclear which of these steps of sending claim 7 is referring to. Appropriate correction is required.

Claim 8 recites "said hello packet" (line 12). It is unclear if this recitation is in reference to the hello packet in claim 7 or the immediately preceding second hello packet in the present claim. Appropriate correction is required.

Claim 9 recites the limitation "said value" (line 5) in the present claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 9 recites the limitation "said sequence of a last send schedule packet" in the present claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 9 recites "said step of sending" in claim 6. Claim 6 recites two steps of sending: sending a schedule packet and sending an acknowledgement packet. It is unclear which of these steps of sending claim 9 is referring to. Appropriate correction is required.

Claim 11 recites the limitation "said wireless link" in claim 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "said time frame" in the present claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "said second scheduling information" in the present claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 is unclear. Particularly, the multiple use of the term "with" (line 3 and line 4), combined with reference to the same phrase "said at least two collocated routers" (lines 1-2 and line 3) and without the use of commas or other syntax, is unclear.

Claim 21 is unclear. Particularly, the phrase "said at least two collocated routers and the plurality of routers and the plurality of non-collocated routers" is unclear.

Claims 21 and 22 recite the limitation "said plurality of frames transmit" in claim 21. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1, 2, 6-13, and 17 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. Patent No. 5,394,436 to Meier et al. (hereafter referred to as Meier '436).

Regarding claims 1 and 12, Meier '436 teaches an RF communications system comprising a plurality of non-collocated nodes (see FIG. 1, bridges 40 and 50), each capable of receiving and transmitting transmissions on a first interface (RF links 106 and 114), and a plurality of collocated nodes (bridges 24 and 42), each capable of communicating between one another over a second interface (data communication link 16). Furthermore, each of the plurality of collocated nodes are capable of receiving and transmitting transmissions to and from the plurality of non-collocated nodes on the first interface (via RF links 104 and 110). Collocated nodes exchange scheduling information with one another over the second interface, wherein the scheduling information is associated with transmissions between the plurality of collocated nodes and each of the non-collocated nodes on the first interface. The scheduling information determines a schedule (spanning tree, see Col. 3, lines 49-55) for the plurality of collocated nodes for transmission between the plurality of collocated nodes and each of the plurality of non-collocated nodes on the first interface.

Regarding claims 2 and 13, Meier `436 teaches a preferred embodiment wherein collocated nodes exchange scheduling information (HELLO packet) over the first interface during a time frame (Col. 20, lines 7-8). Furthermore, it is inherent in the invention of Meier `436 for data to be sent by the non-collocated nodes over the second interface during the same time as the scheduling information is sent over the first interface.

Regarding claim 6, Meier `436 teaches sending a schedule packet (which is part of the information comprised within HELLO packet, see Col. 12, line 61 to Col. 13, line 27) from a first at least one of a plurality of collocated nodes (bridges) to a second at least one collocated node of the plurality of collocated nodes over a first interface (RF links) as well as sending, in response to receiving the schedule packet, an acknowledgement packet (ATTACH.request, see Col. 4, lines 29-31) from the second to the first collocated node(s).

Regarding claim 7, Meier `436 teaches the further steps of: setting a sequence number (count of nodes or number of hops, see Col. 4, lines 9-19) to the value of the sequence number of the schedule packet (part of HELLO packet) received; sending a hello packet (part of HELLO packet) which identifies the sending collocated node(s) (address of the sender, see Col. 4, line 9) and a sequence number (count of nodes or hops, see Col. 4, line 11) of a last sent schedule packet from the first collocated node(s); determining if the sequence number of the last sent schedule packet is less than the sequence number of a last received schedule packet and in response to a positive determination; and transmitting a hello response to the previous sending collocated node(s) which includes the sequence number for the last received schedule packet. This last step of determining and transmitting is taught by Meier `436 in Col. 4, lines 54-61 in combination with Col. 4, lines 27-39, wherein a block 215 at the receiving node (bridge) determines whether

the sequence number (count of nodes or hops, e.g. distance to the root node) provided by the received schedule packet (HELLO packet) is less than the sequence number (e.g. distance to the root node) provided by the previous schedule packet (HELLO packet). If positive determination is made, a hello response (ATACH.request) is transmitted to the previous sending collocated node(s). Thus, the receiving collocated node(s) maintains position according to the smallest sequence number, i.e., maintains attachment to the spanning tree at the node that is logically closest to the root node (Col. 4, lines 59-61).

Regarding claim 8, Meier `436 teaches an embodiment similar to that described above, but which further comprises sending a second hello packet (ATTACH.response) from the first collocated node(s) in response to resetting the sequence number (count of nodes or hops) to the larger of the last sent schedule packet (previous count of nodes or hops) or 1 plus the last received schedule packet (current possible count of nodes or hops) which was received in hello response (HELLO). This embodiment is disclosed in Col. 5, lines 6-10 in combination with the description above.

Regarding claim 9, the same argument as made for claim 7 applies here, wherein if a negative determination is made from the determining step of claim 7, the receiving collocated node(s) still maintain position according to the smallest sequence number, i.e., maintains attachment to the spanning tree at the node that is logically closest to the root node (Col. 4, lines 59-61).

Regarding claims 10, 11 and 17, Meier `436 teaches a first interface comprising a wired link (hard-wired communication link, see Col. 3, lines 12-13) and a second interface comprising a wireless link (RF links, see Col. 3, line 15). Regarding claim 11, Meier `436 discloses RF

transmission but does not disclose the use of orthogonal channels for improved RF transmission, however, such an application is commonly known in the art for improved RF transmission and thus is not novel.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 3-5, 14-16 and 21-22 are rejected under 103(a) as being unpatentable over Meier `436 in view of U.S. Patent No. 6,363,062 to Aaronson et al.

Regarding claims 3-4, 14-15 and 21-22, Meier `436 teaches a system comprising hard-wired and wireless communications between nodes having data and control information. Meier `436, however, does not specifically teach having a first and second time frame for particular transmissions nor does Meier `436 specifically teach exchanging second control information over the second interface.

Aaronson teaches a communications protocol for wireless communications whereby time is broken up into frames, further divided into slots (Col. 4, lines 22-44). A control channel, comprising slots used for control information, as well as a data channel, comprising the remaining slots, are provided within each frame. Thus, Aaronson teaches improved means of wireless communications having a first and second time frame in the form of a control channel

and a data channel, or control and data portions. Aaronson, however, does not teach hard-wired communications with a first set of control information through a first interface such as in Meier `436. On the other hand, Aaronson teaches wireless communications such as those found in the second interface (RF links) of Meier `436 whereby both control information and data are transmitted.

The teachings of Meier `436 would clearly benefit from implementing the communications protocol of Aaronson. Such a combination would provide more reliable transmission between non-collocated and collocated nodes whereby both control information and data could be transmitted between nodes. Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to use the communications protocol of Aaronson with the system of Meier `436.

Regarding claims 5 and 16, as already described, Meier `436 teaches a system comprising collocated and non-collocated nodes with first and second interfaces whereby scheduling information is exchanged. A schedule packet (HELLO packet) is sent from one or more collocated node(s) to each other collocated node which includes: an indication of all known nodes (combination of the spanning tree and the detached-node list, Col. 13, line 20-22), including those within a 2-hop neighborhood of each previous node, and incoming and outgoing collision-free links of the node(s) that are already scheduled (spanning tree). Meier `436 also includes nodes constantly listening while not in active scheduled links (Col. 7, lines 35-39). Meier `436, however, does not specifically include time slots and data channels in which new links can be reserved and on which nodes will be listening.

Aaronson teaches time slots and data channels (Col. 4, lines 22-62) in which new links can be reserved (lines 34-36) and on which nodes will be listening (to requests and grants on control channel, Col. 4, lines 51-55).

Applying the scheduling method of Aaronson to the system of Meier `436 would provide an improved means for scheduling within a hard-wired and wireless communications network. Thus, at the time of the invention, it would have been obvious to one of ordinary skill in the art to implement the scheduling method of Aaronson with the system of Meier `436.

16. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meier `436.

While Meier `436 does not specify using routers, Meier `436 does disclose using RF Networks and bridges as communicating entities in an RF data communications network. At the time of the invention it would have been obvious to one of ordinary skill in the art to implement routers as the communicating entities in this RF data communications network. Such an implementation would provide a network ideal for a variety of applications. Thus, claims 18-20 are rejected for the same reasons as found in the rejections of claims 1 and 10 above with the inclusion that it would have been obvious to one of ordinary skill in the art to implement routers as the communicating entities for the network taught by Meier `436.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,400,702 to Meier (Meier `702) teaches an RF communication system for exchanging packets between hard-wired and wireless network computing devices and further comprising a LISTEN state (see Col. 6, line 35) and routing table (Col. 8, line 11),

U.S. Patent No. 5,673,031 to Meier (Meier `031) teaches an RF network having a roaming terminal communication protocol including the use of wireless routers.

U.S. Patent No. 5,748,619 to Meier (Meier `619) teaches a communication network for providing wireless and hard-wired dynamic routing, and

U.S. Patent No. 4,789,983 to Acampora et al. and U.S. Patent No. 5,970,062 to Bauchot teach networks comprising hard-wired and wireless devices with transmissions occurring during a plurality of time frames or slots.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin M Philpott whose telephone number is 703.305.7357. The examiner can normally be reached on M-F, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy D Vu can be reached on 703.308.6602. The fax phone numbers for the organization where this application or proceeding is assigned are 703.872.9314 for regular communications and 703.872.9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.305.4750.

Justin M. Philpott

jmp
July 18, 2002

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600